FOLDING EXERCISE TREADMILL WITH FRONT INCLINATION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an exercise treadmill and more particularly, to an exercise treadmill having a fold-up capability and a front that is adjustable in the vertical direction.

2. Description of the Related Art

A conventional exercise treadmill essentially includes a base frame and a treadmill frame. The base frame is placed on the floor, having an upright upwardly extended from the front side for holding by the user walking on the treadmill belt of the treadmill frame. In order to simulate walking on a slope, the treadmill frame is provided with a locating hole on the front side for connection to one of a vertical row of locating holes at the front side of the base frame selectively by a lock pin. After use, the user can lift the rear side of the treadmill frame and receive the treadmill frame to the upright of the base frame to reduce space occupation.

This manual design is suitable for a small scale exercise treadmill, not practical for use in a big scale exercise treadmill. When received in the non-operative position, an additional lock device is necessary to lock the treadmill frame in the received position. A mistake during operation may cause the treadmill frame to fall, resulting in an accident.

SUMMARY OF THE INVENTION

It is the primary objective of the present invention to provide an exercise treadmill, which enables the treadmill frame to be received in the non-operative position or adjusted to the desired angle of inclination by means of an electric control.

It is another objective of the present invention to provide an exercise treadmill, which provides a self-locking function during turning of the treadmill frame, ensuring a safety use.

To achieve these objectives of the present invention, the exercise treadmill provided by the present invention comprises a base frame, a treadmill frame and a lifting device. The base frame has a front side and left and right sides each having a first guiding slot and a second guiding slot. The first guiding slot has an upper section substantially extending vertically and a lower section backwardly extended from a bottom side of the upper section. The second guiding slot substantially extends vertically and is disposed behind the upper section of the first guiding slot. The treadmill frame is pivotally movably mounted on the base frame, having a shaft transversely pivotally fastened to a front side thereof, two locating rods symmetrically coaxially disposed at two opposite lateral sides thereof and respectively coupled to and movable along the second guiding slots of the base frame, and two coupling members respectively provided at two distal ends of the shaft and engaged with the first guiding slots of the base frame and movable along the first guiding slots of the base frame upon rotary motion of the shaft. The lifting device is mounted in the treadmill frame, having a motor, and a transmission mechanism coupled between the motor and the shaft of the treadmill frame for rotating the shaft and the coupling members upon operation of the motor for enabling the front side of said treadmill frame to be lifted upon movement of the coupling members in the upper sections of the first guiding slots of the base frame, and for enabling a rear side of the treadmill frame to be lifted and turned about the locating rods during operation of the motor while the coupling members is moved to the lower sections of the first guiding slots of the base frame.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view of an exercise treadmill according to the present invention.

FIG. 2 is a left side view of the present invention showing the treadmill frame set in horizontal.

FIG. 3 is similar to FIG. 2 but showing the treadmill frame lifted.

FIG. 4 is a left side view of the present invention showing the received status of the exercise treadmill.

DETAILED DESCRIPTION OF THE INVENTION

As shown in FIGS. 1 and 2, an exercise treadmill provided by a preferred embodiment of the present invention is shown comprised of a base frame **10**, a treadmill frame **20**, and a lifting device **40** mounted in the treadmill frame **20**.

The base frame **10** is a rectangular open frame formed of metal rod members by welding for placing on the floor. The base frame **10** comprises an upright **12** upwardly extended from the top near the front side for holding by the user operating the exercise treadmill, a control panel **18** mounted on the upright **12**, and two upright sidewalls **13** bilaterally longitudinally disposed at the front left and right sides. The sidewalls **13** each have a first guiding slot **14** and a second guiding slot **15**. The first guiding slot **14** includes an upwardly extended upper section **16**, and a lower section **17** backwardly extended from the bottom end of the upper section **16**. A chain (not shown) is respectively provided at an inner side of the first guiding slot **14** in each upright sidewall **13**. The second slot **15** extends upwards and disposed behind the upper section **16** of the first guiding slot **14**. Two (or more) compression springs **19** are mounted in the base frame **10**. The compression springs **19** each have a bottom end affixed to the bottom side of the base frame **10** and a top end extended upwards and

connected to the treadmill frame **20**, thereby imparting an upward pressure to the treadmill frame **20**.

The treadmill frame **20** is mounted on the base frame **10**, having a front side **21**, a rear side **22**, a left side **23**, and a right side **24**. A walking belt **25** is located between the left side **23** and the right side **24** on which the user walks. A foot member **26** is provided at the bottom of the rear side **22** for supporting the rear side of the treadmill frame **20** on the floor. A shaft **27** is fastened pivotally with the front side **21** of the treadmill frame **20** and transversely extended out of the left side **23** and the right side **24**. Two locating rods **28** are respectively affixed to the left side **23** and the right side **24** and disposed behind the shaft **27**. Coupling members **29**, for example chain wheels, are respectively fastened to the middle part and two distal ends of the shaft **27**. The two chain wheels **29** at the two distal ends of the shaft **27** are respectively meshed with the chains in the first guiding slots **14** of the base frame **10**, and can be controlled to move along the first guiding slots **14**. The two locating rods **28** are respectively coupled to the second guiding slots **15** in the two upright sidewalls **13** of the base frame **10**. During rotary motion of the shaft **27**, the chain wheels **29** are moved along the first guiding slots **14**, and the locating rods **28** are moved along the second guiding slots **15**.

The lifting device **40** comprises a motor **41** and a transmission mechanism **30** driven by the motor **41**. The transmission mechanism **30** is comprised of a screw rod **32**, a sliding block **33**, and a chain **34**. The screw rod **32** is rotatable on its own axis and perpendicularly aimed at the middle part of the shaft **27**. The sliding block **33** is threaded onto the screw rod **32**. The chain **34** is mounted on the chain wheel **29** at the middle part of the shaft **27** and a coupling member, for example, a chain wheel **35** at the rear side of the screw rod **32**. The chain **34** has a lower portion meshed with the

sliding block **33**. The motor **41** has an output shaft **36** coupled to the front end of the screw rod **32** by a belt **37**. Starting the motor **41** causes the screw rod **32** to rotate. During rotary motion of the screw rod **32**, the sliding block **33** is forced to move along the screw rod **32**, thereby causing the chain **34** to rotate the chain wheels **29** and the shaft **27**. By means of the above design, the output power of the motor **41** is transmitted to the shaft **27** through a speed reduction and power multiplying action, thereby causing the chain wheels **29** at the two ends of the shaft **27** to move along the first guiding slots **14**.

As shown in FIGS. 2 and 3, when wishing to increase the angle of inclination of the treadmill frame **20**, operate the control panel **18** to rotate the output shaft **36** of the motor **41** of the lifting device **40** clockwise (viewed from the front side of the treadmill frame **20**), causing the belt **37** to rotate the screw rod **32** in clockwise direction. At this time, the sliding block **33** is moved along the screw rod **32** toward the rear side **22** of the treadmill frame **20** to turn the chain **34** in counter-clockwise direction (viewed from the left side of the treadmill frame **20**). During counter-clockwise rotation of the chain **34**, the shaft **27** is rotated counter-clockwise, thereby causing the chain wheels **29** at the two distal ends of the shaft **27** to move upwards along the upper sections **16** of the first guiding slots **14** and the locating rods **28** to move upwards along the second guiding slots **15**, and therefore the treadmill frame **20** is turned about an axis passing through the foot member **26** and the front side **21** of the treadmill frame **20** is lifted from the base frame **10**. When wishing to reduce the angle of inclination of the treadmill frame **20**, operate the control panel **18** to rotate the output shaft **36** of the motor **41** of the lifting device **40** in counter-clockwise direction and to further rotate the chain **34** in clockwise direction. During clockwise rotation of the chain **34**, the shaft **27** is rotated clockwise to move the chain wheels **29**

at the two distal ends of the shaft **27** downwards along the upper sections **16** of the first guiding slots **14**, and therefore the front side **21** of the treadmill frame **20** is lowered.

As shown in FIG. 4, when wishing to receive the treadmill frame **20**, operate the control panel **18** to rotate the output shaft **36** of the motor **41** of the lifting device **40** in counter-clockwise direction and to further rotate the chain **34** in clockwise direction. When continuously rotating the chain **34** in clockwise direction to drive the shaft **27** to rotate in clockwise direction, the two chain wheels **29** at the two distal ends of the shaft **27** are moved from the upper sections **16** of the first guiding slots **14** toward the corresponding lower sections **17**. When the two chain wheels **29** at the two distal ends of the shaft **27** moved to the corresponding lower sections **17**, the two locating rods **28** are respectively stopped at the bottom of the second guiding slots, thereby causing the treadmill frame **20** to be turned about an axis passing through the locating rods **28**, and therefore the rear side **22** of the treadmill frame **20** is lifted from the floor and received to the upright **12**. Because the sliding block **33** is coupled to the output shaft **36** through the screw rod **32**, the output shaft **36** can drive the sliding block **33** to move along the screw rod **32**; however the sliding block **33** cannot drive the output shaft **36** to rotate. This one-way self-locking function prevents falling of the treadmill frame **20** during lifting or receiving operation.

By means of the aforesaid design, the exercise treadmill can be electrically controlled to adjust the angle of inclination and automatically received in the non-operative position.

Further, gear and rack coupling means or ratchet coupling means may be used to substitute for the chain and chain wheel engagement structure between the coupling members of the two distal ends of the shaft and the first guiding slots of the base frame.

Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.